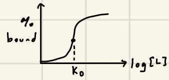
Enzyme Equations to know

$K_D = \frac{[P][L]}{[P+L]} = \frac{1}{K_A}$ $\downarrow K_D$ = stronger protein-ligand binding (K_i is just K_D for inhibitors specifically)

$K_D = [L]$ when 50% bound to Protein

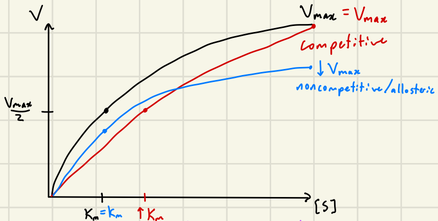


$V_{max} = k_{cat}[E]$

catalytic efficiency $= \frac{k_{cat}}{K_m}$

$V_0 = \frac{V_{max} \times [S]}{K_m + [S]}$

Enzyme Plots



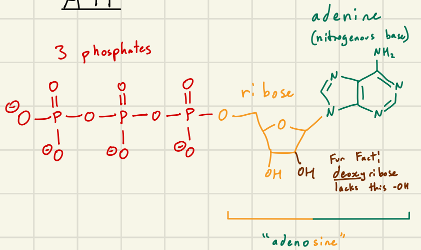
$K_m = [S]$ @ $V = \frac{1}{2} V_{max}$

so in summary:

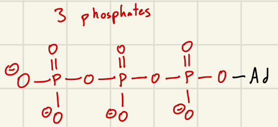
competitive	noncompetitive/allosteric
$= V_{max}$	$\downarrow V_{max}$
$\uparrow K_m$	$= K_m$

Good Inhibitors tend to 1) mimic substrate intermediates
2) mimic substrate peptide sequence

ATP

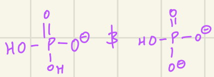


but for Chem 27 only need to know this abbreviation:



Phosphoric Acid

"relevant":

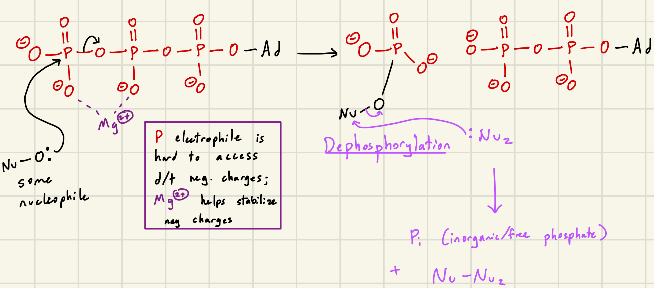


Fun Fact! H_3PO_4 pKas ~ 2, 7, 12

Phosphate Bonds

Thermodynamically favorable $\Delta G << 0$

Kinetically unfavorable d/t neg charges (needs Mg^{2+} to lower E_a)



Names

ATP = ad – 3 phosphates

ADP = ad – 2 phosphates

AMP = ad – 1 phosphate

P_i = free PO_4^{3-}

PP_i = free $^{2-}PO_3-PO_3^{2-}$